Voluntary Register of Clinical Technologists

Application for the Regulation of the Clinical Technologist Profession by the Health Professions Council

Executive Summary

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The Voluntary Register of Clinical Technologists is administered by the Institute of Physics and Engineering in Medicine in partnership with the Association of Renal Technologists and the Institution of Incorporated Engineers

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1.0 Introduction

The majority of Clinical Technologists work in NHS hospital departments of Medical Physics and Clinical Engineering. Some may also be found in other NHS hospital departments such as Estates, in private health care, academic institutions, and, the medical device industry.

All of the activities performed by Clinical Technologists have the application of technology to clinical practice as a common thread. Clinical Technologists perform invasive procedures on an individual basis with patients, or, make clinical interventions, or, exercise judgement that can substantially impact on patient health or welfare. When acting autonomously within their area of expertise they have potential to cause harm. Currently, there is no statutory requirement for regulation of practice for these individuals. The specialties practiced by Clinical Technologists are divided into two specific routes: Medical Physics and Clinical Engineering. These are described in Box 1 below.

Medical Physics:

- nuclear medicine
- radiotherapy physics
- ultrasound
- radiation protection and diagnostic radiology
- bone mineral measurement

Clinical Engineering:

- renal technology
- rehabilitation engineering
- assistive technology
- radiotherapy technology
- clinical measurement
- clinical instrumentation
- equipment management and electro-biomedical engineering

Box 1: Medical Physics and Clinical Engineering Specialties

Some activities involve more patient contact than others but all require the application of science, engineering and technology to a high degree and can have a significant impact on patient safety both directly and indirectly. This application of science, engineering and technology to clinical practice leads to the title Clinical Technologist.

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1.1 Background

In 1999 the Chief Scientific Officer asked the Institute of Physics and Engineering in Medicine (IPEM) to pursue the issue of statutory regulation of practice of Clinical Technologists. Following this request, IPEM, in conjunction with its professional body partners, the Association of Renal Technologists (ART) and the Institution of Incorporated Engineers (IIE), formed the Voluntary Register of Clinical Technologists (VRCT). The remit of the VRCT, as defined by the constituent professional bodies was to:

- Form an overarching professional structure to take forward a combined petition for Statutory Regulation
- Define criteria for entry to the voluntary register
- Compile, evaluate and monitor registrants

In the meantime IPEM had:

- Defined the generic academic knowledge and professional skills into two appropriate vocational degree qualifications to produce practitioners fit for purpose and safe to practice
- Liased with current and potential educational providers to develop and deliver appropriate qualifications
- Established a process to accredit and monitor education delivery and professional practice outcomes

This summary document sets out to present the case for the petition for registration of Clinical Technologists through the Health Professions Council.

1.2 Petition Evidence

1.2.0 Part A of the assessment – eligibility for regulation

To prove eligibility applicant occupations must be involved with at least one of the following activities:-

- **Invasive procedures** – an example of which is: the insertion of radioactive caesium into the cervix during brachytherapy treatment.
- **Clinical intervention with the potential for harm** – an example of which is: a specially designed and manufactured assistive aid, used to support a disabled person, has the potential to fail in use.
- **Exercise of judgement by unsupervised professionals that can substantially impact on the patient health or welfare –** an example of which is: the maintenance and calibration of medical devices used for invasive procedures such as infusion pumps.

1.2.1 Discrete area of activity displaying some homogeneity

All individuals working in Clinical Technology are involved in some aspect of the diagnosis, treatment, management, care and understanding of disease or disability. Their principle roles include:-

- Planning and performance of diagnostic or therapeutic techniques, such as, nuclear medicine imaging or brachytherapy treatments.
- Clinical liaison, interpretation of results and the development of treatment plans. For example, in bone mineral measurement and radiotherapy physics.
- Development and implementation of techniques and services such as, intracranial monitoring of head injuries and the application of telemedicine to clinical measurement services in the community.
- Design and manufacture of medical devices. For example assistive aids for the disabled, and, innovative devices such as the recently developed, award winning, pupilometer used to measure dilation of the pupil of the eye.
- Equipment management which includes medical device procurement, repair and maintenance, calibration and quality control, user training, and disposal.
- Contributing to the clinical management of patients.
- Teaching, training and contributing to research.
- Management and planning of work activities/services.

In the regulated professions the scope of practice of Clinical Technologists overlaps with that of Clinical Scientists registered in the Medical Physics Modality, however, the training and application are different. Clinical Technologists' qualifications are more vocational than those of Clinical Scientists and are competence-based and primarily practical in nature.

The specialties of nuclear medicine and radiotherapy physics overlap with Radiographers. Clinical Technologists in nuclear medicine train to cover generic topics and then specialise in nuclear medicine as their first degree. Diagnostic Radiographers complete their first degree in diagnostic radiography and their primary registration is as Radiographers. Nuclear medicine is an extended role and Radiographers normally undertake a postgraduate qualification to work in nuclear medicine. Therapy Radiographers study a syllabus that includes anatomy and dose calculations amongst other subjects but Clinical Technologist study is more focused on the topics required for radiotherapy treatment planning, patient immobilisation, equipment quality assurance and dosimetry.

In the unregulated professions, the specialty of Ultrasound may overlap with Sonographers and Vascular Technologists and the specialty of clinical measurement with Clinical Physiologists. However, where overlap occurs in the scope of practice, this is normally due to the Clinical Technologist participating in

research and/or clinical trials into new techniques rather than participating in the routine delivery of services. Once a new technique is established into clinical practice the Clinical Technologist would not normally be involved in its routine service delivery.

1.2.2 Defined body of knowledge

The seeds for the growth of Medical Physics and Clinical Engineering in health care were sown in the closing decade of the 19th century by three important discoveries:

- X-rays by Wilhelm Röntgen in Germany in 1895
- Radioactivity by Henri Becquerel in France in 1896
- The electron by JJ Thompson in 1897

As with other aspects of technological development, the underlying principles elucidated by physicists were soon turned into practical applications through the skills of engineers and technologists. Technologists played a key role in the rapid development of medical technology in the second part of the 20th century. As we move into the 21st century, Clinical Technologists, through their continued activity in Medical Physics and Clinical Engineering, continue to have an essential role in delivering modern, effective health care in a wide variety of ways.

Educational pathways have been developed which delineate the role of the Clinical Technologist. These are defined in the occupations body of knowledge which can be found in the Training Scheme Prospectus for Clinical Technologists specialising in Physics and Engineering in Health Care (ISBN 1 903613 00 0), published by the Institute of Physics and Engineering in Medicine in October 2001. The Training Scheme Prospectus identifies the two branches of Clinical Technology: medical physics and clinical engineering.

As well as establishing the underpinning academic knowledge the Training Scheme Prospectus also establishes the standards of proficiency required for all practitioners working in Clinical Technology.

1.2.3 Evidence of practice based on efficacy

The practice of Clinical Technologists is based on recognised national and international standards set by a range of professional bodies and national and international standards institutions. For example, Report 71 of the Institute of Physics and Engineering in Medicine defines the standards for the routine quality assurance of ultrasound equipment. Clinical Technologists audit their practice against these standards and are involved, for example, in inter-departmental dosimetry audits in Radiotherapy Physics to ensure that radiation therapy equipment is calibrated correctly.

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Clinical Technologists implement evidence-based improvements in patient care. For example, Clinical Technologists have worked to introduce new methods of immobilisation in Radiotherapy, leading to reductions in waiting times for Radiotherapy and improvements in patient experience and outcome. Similarly, they have been involved in developing standards for water sampling in renal dialysis water treatment plants to improve the safety of renal dialysis for patients.

The three professional bodies involved in the VRCT publish eminent, peer-reviewed, scientific and engineering journals, and, organise prestigious scientific meetings covering a wide range of Medical Physics and Clinical Engineering subjects. As part of the HPC application process the VRCT has collected evidence of more than five hundred publications or presentations made by registered Clinical Technologists since 1997.

1.2.4 One established professional body

The VRCT is a sub-committee of each of the constituent professional bodies. The VRCT Assessors' Panel, which manages the Register, is made up of representatives from each of the professional bodies. All registrants have adopted the VRCT Code of Professional Conduct and Disciplinary Procedure.

Each of the professional bodies represented on the VRCT also have their own mechanisms for membership, conduct and discipline. Membership of a professional body is not a requirement of registration with the VRCT.

1.2.5 Occupation must operate a voluntary register

The Voluntary Register of Clinical Technologists opened in October 2000 and on 1st March 2004 had 1526 registrants with 132 applications pending. Based on Department of Health statistics, there are approximately 3000 potential registrants. Thus the VRCT represents over 50% of the eligible workforce. In a ballot of Registrants, held in February 2004, 93% of the returned votes were in favour of the view that the VRCT should seek regulation of practice through the Health Professions Council.

The primary criterion for entry onto the Voluntary Register is as follows:

Successful completion of the IPEM Training Scheme for Clinical Technologists specialising in Physics and Engineering in Health Care.

Alternatively, candidates may apply through the Grandparenting provision. The criteria for entry onto the Voluntary Register through Grandparenting provision are as follows:

1. There must be evidence of employment in a technical role involving work in health care areas such as medical physics, clinical engineering, medical equipment maintenance or medical equipment manufacturing, or,

biological science, physical science or engineering related to health care within an academic institution, and,

2. There must be evidence of not less than three years work experience in a technical role (as in 1 above) including at least two years appropriate, formal in-service training provided by a suitable organisation, or, in lieu of the formal in-service training, evidence of not less than four years relevant work experience, or, registration as an Incorporated Engineer or Engineering Technician.

1.2.6 Defined routes of entry

At present the profession is in a period of transition. For many years the established route of entry was a minimum qualification of a national certificate in physical sciences or engineering, however, in recent years, there has been an increased demand for entrants to the profession to possess a suitable first degree or higher national certificate or higher national diploma. Unfortunately the demand of the profession has outstripped the provision of appropriate first degree courses provided by the higher education sector.

Of the two routes within the profession there are sufficient first degree Clinical Technology courses available or about to become available in Medical Physics, however, at this time, there are insufficient first degree Clinical Technology courses available in Clinical Engineering although there are still sufficient higher national certificate courses in engineering. As a consequence, until there are sufficient first degree Clinical Technology courses available in Clinical Engineering, there are two routes of entry.

1. Entrants following the Medical Physics route will undertake an undergraduate degree programme in Clinical Technology that is subject to the quality assurance framework in the university sector. Degree courses will be accredited on behalf of the VRCT by IPEM. The degree courses will include clinical practice modules awarded academic credit by the university that will ensure graduates have met the competencies to be fit to practice.

2. Entrants following the Clinical Engineering route will meet the minimum educational requirement of a Higher National Certificate or Higher National Diploma (HNC/HND) in an appropriate engineering subject followed by a professional body examination. The HNC/HND programme will be subject to the quality assurance mechanisms in place in the Further Education sector. The HNC/HND programme will be undertaken on a full or part time basis and is followed by, or interspersed with, a period of clinical practice and ongoing work based training culminating in a professional body exam. The professional body exam will be undertaken by the successor organisation to VRCT and will ensure robust assessment of education, training and competence. Clinical practice and

ongoing work based training takes place in training centres accredited by IPEM on behalf of the VRCT. There is a system of continuous assessment supported by externally appointed training moderators.

1.2.7 Occupation has independently assessed entry qualifications
As explained in 1.2.6 above, the profession is currently in a period of transition and as such we currently have no evidence to support recognition of the entry routes.

There is currently no QAA benchmarking or equivalent, however, the VRCT and its successor body will work with the university sector to develop a QAA benchmark statement.

1.2.8 Have standards in relation to conduct performance and ethics
Each registrant of the VRCT is required to adhere to the VRCT Code of Professional Conduct.

1.2.9 Occupation has disciplinary procedures to enforce those standards
The VRCT Disciplinary Procedure applies to all Registrants but since its inception in August 2000 there have been no cases where the disciplinary procedure has been invoked.

1.2.10 Occupation requires commitment to CPD
It is a requirement of membership of the VRCT that registrants are committed to and undertake continuing professional development.

1.3 Conclusions
The Voluntary Register of Clinical Technologists believes that it satisfies the criteria laid down by the Health Professions Council for statutory regulation of practice.

The professional bodies involved with the VRCT have a long history of the development and management of systems used to monitor and maintain the standards of their membership through the establishment and implementation of registration systems for the Health Professions Council, the Science Council and the Engineering Council.

Current registrants of the VRCT are committed to adhere to all of the requirements that regulation by the HPC would bring. Currently practitioners on the VRCT are deemed competent to practice based on the accreditation of prior and experiential evidence. It is accepted that these will be superseded by HPC regulations in accordance with the acquired rights of practitioners of newly regulated groups.

There is evidence of substantial support for this application from many of the stakeholders in health care. The VRCT invites the HPC to protect the title of Clinical Technologist in order to ensure public safety.